

## PATENT COOPERATION TREATY

PCT

NOTIFICATION OF ELECTION  
(PCT Rule 61.2)

From the INTERNATIONAL BUREAU

To:

Commissioner  
US Department of Commerce  
United States Patent and Trademark  
Office, PCT  
2011 South Clark Place Room  
CP2/5C24  
Arlington, VA 22202  
ETATS-UNIS D'AMERIQUE

in its capacity as elected Office

Date of mailing (day/month/year) 12 December 2000 (12.12.00)	To:  Commissioner US Department of Commerce United States Patent and Trademark Office, PCT 2011 South Clark Place Room CP2/5C24 Arlington, VA 22202 ETATS-UNIS D'AMERIQUE  in its capacity as elected Office
International application No. PCT/US00/11418	Applicant's or agent's file reference PU3682WO
International filing date (day/month/year) 28 April 2000 (28.04.00)	Priority date (day/month/year) 30 April 1999 (30.04.99)
Applicant  WALKER, Dwight, Sherod et al	

1. The designated Office is hereby notified of its election made:

in the demand filed with the International Preliminary Examining Authority on:

21 November 2000 (21.11.00)

in a notice effecting later election filed with the International Bureau on:

2. The election  was

was not

made before the expiration of 19 months from the priority date or, where Rule 32 applies, within the time limit under Rule 32.2(b).

The International Bureau of WIPO 34, chemin des Colombettes 1211 Geneva 20, Switzerland  Facsimile No.: (41-22) 740.14.35	Authorized officer  C. Cupello  Telephone No.: (41-22) 338.83.38
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## PENT COOPERATION TREATY

## PCT

## INTERNATIONAL SEARCH REPORT

(PCT Article 18 and Rules 43 and 44)

Applicant's or agent's file reference <b>PU3682W0</b>	<b>FOR FURTHER ACTION</b>	see Notification of Transmittal of International Search Report (Form PCT/ISA/220) as well as, where applicable, item 5 below.
International application No. <b>PCT/US 00/ 11418</b>	International filing date (day/month/year) <b>28/04/2000</b>	(Earliest) Priority Date (day/month/year) <b>30/04/1999</b>
Applicant <b>GLAXO GROUP LIMITED.</b>		

This International Search Report has been prepared by this International Searching Authority and is transmitted to the applicant according to Article 18. A copy is being transmitted to the International Bureau.

This International Search Report consists of a total of 3 sheets.

It is also accompanied by a copy of each prior art document cited in this report.

**1. Basis of the report**

- a. With regard to the language, the international search was carried out on the basis of the international application in the language in which it was filed, unless otherwise indicated under this item.
  - the international search was carried out on the basis of a translation of the international application furnished to this Authority (Rule 23.1(b)).
- b. With regard to any nucleotide and/or amino acid sequence disclosed in the international application, the international search was carried out on the basis of the sequence listing :
  - contained in the international application in written form.
  - filed together with the international application in computer readable form.
  - furnished subsequently to this Authority in written form.
  - furnished subsequently to this Authority in computer readable form.
  - the statement that the subsequently furnished written sequence listing does not go beyond the disclosure in the international application as filed has been furnished.
  - the statement that the information recorded in computer readable form is identical to the written sequence listing has been furnished

2.  Certain claims were found unsearchable (See Box I).

3.  Unity of Invention is lacking (see Box II).

4. With regard to the title,

- the text is approved as submitted by the applicant.
- the text has been established by this Authority to read as follows:

5. With regard to the abstract,

- the text is approved as submitted by the applicant.
- the text has been established, according to Rule 38.2(b), by this Authority as it appears in Box III. The applicant may, within one month from the date of mailing of this international search report, submit comments to this Authority.

6. The figure of the drawings to be published with the abstract is Figure No.

- as suggested by the applicant.
- because the applicant failed to suggest a figure.
- because this figure better characterizes the invention.

1

None of the figures.

## INTERNATIONAL SEARCH REPORT

International Application No

PCT/US 00/11418

A. CLASSIFICATION OF SUBJECT MATTER  
IPC 7 G01N21/35

According to International Patent Classification (IPC) or to both national classification and IPC

## B. FIELDS SEARCHED

Minimum documentation searched (classification system followed by classification symbols)

IPC 7 G01N

Documentation searched other than minimum documentation to the extent that such documents are included in the fields searched

Electronic data base consulted during the international search (name of data base and, where practical, search terms used)

EPO-Internal, WPI Data, PAJ, COMPENDEX, INSPEC, BIOSIS

## C. DOCUMENTS CONSIDERED TO BE RELEVANT

Category	Citation of document, with indication, where appropriate, of the relevant passages	Relevant to claim No.
Y	EP 0 425 446 A (ERIDANIA) 2 May 1991 (1991-05-02)	1,10,18, 26
A	column 2, line 38 -column 3, line 24; claims 6,7; figure 5	4,5,7, 13,15, 21,23
Y	US 4 264 814 A (FREUND SAMUEL M ET AL) 28 April 1981 (1981-04-28)	1,10,18, 26
A	column 2, line 18 - line 29  column 2, line 52 -column 4, line 3	4,5,13, 21
	---	-/-

 Further documents are listed in the continuation of box C. Patent family members are listed in annex.

## ° Special categories of cited documents :

- "A" document defining the general state of the art which is not considered to be of particular relevance
- "E" earlier document but published on or after the international filing date
- "L" document which may throw doubts on priority claim(s) or which is cited to establish the publication date of another citation or other special reason (as specified)
- "O" document referring to an oral disclosure, use, exhibition or other means
- "P" document published prior to the international filing date but later than the priority date claimed

"T" later document published after the international filing date or priority date and not in conflict with the application but cited to understand the principle or theory underlying the invention

"X" document of particular relevance; the claimed invention cannot be considered novel or cannot be considered to involve an inventive step when the document is taken alone

"Y" document of particular relevance; the claimed invention cannot be considered to involve an inventive step when the document is combined with one or more other such documents, such combination being obvious to a person skilled in the art.

"&" document member of the same patent family

Date of the actual completion of the international search

Date of mailing of the international search report

13 September 2000

21/09/2000

Name and mailing address of the ISA

European Patent Office, P.B. 5818 Patentlaan 2  
NL - 2280 HV Rijswijk  
Tel. (+31-70) 340-2040, Tx. 31 651 epo nl,  
Fax: (+31-70) 340-3016

Authorized officer

Stuebner, B

## INTERNATIONAL SEARCH REPORT

International Application No  
PCT/US 00/11418

## C.(Continuation) DOCUMENTS CONSIDERED TO BE RELEVANT

Category	Citation of document, with indication, where appropriate, of the relevant passages	Relevant to claim No.
Y	US 5 457 528 A (TOBIAS REGINALD) 10 October 1995 (1995-10-10) column 2, line 30 - line 38	1,10,18, 26
A	column 5, line 58 -column 6, line 41; figures 1-3 column 2, line 63 -column 3, line 10 ---	4,5,13, 21
A	US 4 220 510 A (BRUECK STEVEN R J ET AL) 2 September 1980 (1980-09-02) column 2, line 21 - line 38; figure 1 -----	1,4,5, 10,13, 18,21,26

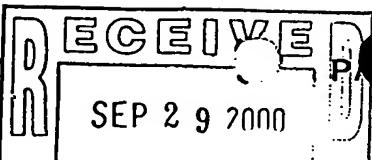
**INTERNATIONAL SEARCH REPORT**

Information on patent family members

International Application No

PCT/US 00/11418

Patent document cited in search report	Publication date	Patent family member(s)		Publication date
EP 0425446 A	02-05-1991	IT CA NO PT	1236236 B 2023644 A 903947 A 95288 A	27-01-1993 25-04-1991 25-04-1991 29-05-1992
US 4264814 A	28-04-1981		NONE	
US 5457528 A	10-10-1995		NONE	
US 4220510 A	02-09-1980		NONE	



PCT COOPERATION TREATY

LOGGED IN

MKE 9/29/00

From: GLOBAL INTERNATIONAL SEARCHING AUTHORITY

PCT

To:  
GLAXO WELLCOME INC  
Attn. Levy, David  
Five Moore Drive, PO Box 13398  
Research Triangle Park  
North Carolina 27709-3398  
UNITED STATES OF AMERICA

NOTIFICATION OF TRANSMITTAL OF  
THE INTERNATIONAL SEARCH REPORT  
OR THE DECLARATION

(PCT Rule 44.1)

IPSS/ICED/HBD

Date of mailing  
(day/month/year) 21/09/2000

Applicant's or agent's file reference

PU3682W0

FOR FURTHER ACTION See paragraphs 1 and 4 below

International application No.

PCT/US 00/11418

International filing date  
(day/month/year)

28/04/2000

Applicant

GLAXO GROUP LIMITED.

1.  The applicant is hereby notified that the International Search Report has been established and is transmitted herewith.

**Filing of amendments and statement under Article 19:**

The applicant is entitled, if he so wishes, to amend the claims of the International Application (see Rule 46):

**When?** The time limit for filing such amendments is normally 2 months from the date of transmittal of the International Search Report; however, for more details, see the notes on the accompanying sheet.

**Where?** Directly to the International Bureau of WIPO  
34, chemin des Colombettes  
1211 Geneva 20, Switzerland  
Facsimile No.: (41-22) 740.14.35

For more detailed instructions, see the notes on the accompanying sheet.

2.  The applicant is hereby notified that no International Search Report will be established and that the declaration under Article 17(2)(a) to that effect is transmitted herewith.

3.  With regard to the protest against payment of (an) additional fee(s) under Rule 40.2, the applicant is notified that:

the protest together with the decision thereon has been transmitted to the International Bureau together with the applicant's request to forward the texts of both the protest and the decision thereon to the designated Offices.

no decision has been made yet on the protest; the applicant will be notified as soon as a decision is made.

4. Further action(s): The applicant is reminded of the following:

Shortly after 18 months from the priority date, the international application will be published by the International Bureau. If the applicant wishes to avoid or postpone publication, a notice of withdrawal of the international application, or of the priority claim, must reach the International Bureau as provided in Rules 90bis.1 and 90bis.3, respectively, before the completion of the technical preparations for international publication.

Within 19 months from the priority date, a demand for international preliminary examination must be filed if the applicant wishes to postpone the entry into the national phase until 30 months from the priority date (in some Offices even later).

Within 20 months from the priority date, the applicant must perform the prescribed acts for entry into the national phase before all designated Offices which have not been elected in the demand or in a later election within 19 months from the priority date or could not be elected because they are not bound by Chapter II.

Name and mailing address of the International Searching Authority  
European Patent Office, P.B. 5818 Patentlaan 2  
NL-2280 HV Rijswijk  
Tel. (+31-70) 340-2040, Tx. 31 651 epo nl,  
Fax: (+31-70) 340-3016

Authorized officer

Mildred Condon

## NOTES TO FORM PCT/ISA/220

These Notes are intended to give the basic instructions concerning the filing of amendments under article 19. The Notes are based on the requirements of the Patent Cooperation Treaty, the Regulations and the Administrative Instructions under that Treaty. In case of discrepancy between these Notes and those requirements, the latter are applicable. For more detailed information, see also the PCT Applicant's Guide, a publication of WIPO.

In these Notes, "Article", "Rule", and "Section" refer to the provisions of the PCT, the PCT Regulations and the PCT Administrative Instructions respectively.

### INSTRUCTIONS CONCERNING AMENDMENTS UNDER ARTICLE 19

The applicant has, after having received the international search report, one opportunity to amend the claims of the international application. It should however be emphasized that, since all parts of the international application (claims, description and drawings) may be amended during the international preliminary examination procedure, there is usually no need to file amendments of the claims under Article 19 except where, e.g. the applicant wants the latter to be published for the purposes of provisional protection or has another reason for amending the claims before international publication. Furthermore, it should be emphasized that provisional protection is available in some States only.

#### What parts of the international application may be amended?

Under Article 19, only the claims may be amended.

During the international phase, the claims may also be amended (or further amended) under Article 34 before the International Preliminary Examining Authority. The description and drawings may only be amended under Article 34 before the International Examining Authority.

Upon entry into the national phase, all parts of the international application may be amended under Article 28 or, where applicable, Article 41.

**When?** Within 2 months from the date of transmittal of the international search report or 16 months from the priority date, whichever time limit expires later. It should be noted, however, that the amendments will be considered as having been received on time if they are received by the International Bureau after the expiration of the applicable time limit but before the completion of the technical preparations for international publication (Rule 46.1).

#### Where not to file the amendments?

The amendments may only be filed with the International Bureau and not with the receiving Office or the International Searching Authority (Rule 46.2).

Where a demand for international preliminary examination has been/is filed, see below.

**How?** Either by cancelling one or more entire claims, by adding one or more new claims or by amending the text of one or more of the claims as filed.

A replacement sheet must be submitted for each sheet of the claims which, on account of an amendment or amendments, differs from the sheet originally filed.

All the claims appearing on a replacement sheet must be numbered in Arabic numerals. Where a claim is cancelled, no renumbering of the other claims is required. In all cases where claims are renumbered, they must be renumbered consecutively (Administrative Instructions, Section 205(b)).

**The amendments must be made in the language in which the international application is to be published.**

#### What documents must/may accompany the amendments?

**Letter (Section 205(b)):**

The amendments must be submitted with a letter.

The letter will not be published with the international application and the amended claims. It should not be confused with the "Statement under Article 19(1)" (see below, under "Statement under Article 19(1)").

**The letter must be in English or French, at the choice of the applicant. However, if the language of the international application is English, the letter must be in English; if the language of the international application is French, the letter must be in French.**

## NOTES TO FORM PCT/ISA/220 (continued)

The letter must indicate the differences between the claims as filed and the claims as amended. It must, in particular, indicate, in connection with each claim appearing in the international application (it being understood that identical indications concerning several claims may be grouped), whether

- (i) the claim is unchanged;
- (ii) the claim is cancelled;
- (iii) the claim is new;
- (iv) the claim replaces one or more claims as filed;
- (v) the claim is the result of the division of a claim as filed.

**The following examples illustrate the manner in which amendments must be explained in the accompanying letter:**

1. [Where originally there were 48 claims and after amendment of some claims there are 51]:  
"Claims 1 to 29, 31, 32, 34, 35, 37 to 48 replaced by amended claims bearing the same numbers; claims 30, 33 and 36 unchanged; new claims 49 to 51 added."
2. [Where originally there were 15 claims and after amendment of all claims there are 11]:  
"Claims 1 to 15 replaced by amended claims 1 to 11."
3. [Where originally there were 14 claims and the amendments consist in cancelling some claims and in adding new claims]:  
"Claims 1 to 6 and 14 unchanged; claims 7 to 13 cancelled; new claims 15, 16 and 17 added." or  
"Claims 7 to 13 cancelled; new claims 15, 16 and 17 added; all other claims unchanged."
4. [Where various kinds of amendments are made]:  
- "Claims 1-10 unchanged; claims 11 to 13, 18 and 19 cancelled; claims 14, 15 and 16 replaced by amended claim 14; claim 17 subdivided into amended claims 15, 16 and 17; new claims 20 and 21 added."

### "Statement under article 19(1)" (Rule 46.4)

The amendments may be accompanied by a statement explaining the amendments and indicating any impact that such amendments might have on the description and the drawings (which cannot be amended under Article 19(1)).

The statement will be published with the international application and the amended claims.

**It must be in the language in which the international application is to be published.**

It must be brief, not exceeding 500 words if in English or if translated into English.

It should not be confused with and does not replace the letter indicating the differences between the claims as filed and as amended. It must be filed on a separate sheet and must be identified as such by a heading, preferably by using the words "Statement under Article 19(1)."

It may not contain any disparaging comments on the international search report or the relevance of citations contained in that report. Reference to citations, relevant to a given claim, contained in the international search report may be made only in connection with an amendment of that claim.

### Consequence if a demand for international preliminary examination has already been filed

If, at the time of filing any amendments under Article 19, a demand for international preliminary examination has already been submitted, the applicant must preferably, at the same time of filing the amendments with the International Bureau, also file a copy of such amendments with the International Preliminary Examining Authority (see Rule 62.2(a), first sentence).

### Consequence with regard to translation of the international application for entry into the national phase

The applicant's attention is drawn to the fact that, where upon entry into the national phase, a translation of the claims as amended under Article 19 may have to be furnished to the designated/elected Offices, instead of, or in addition to, the translation of the claims as filed.

For further details on the requirements of each designated/elected Office, see Volume II of the PCT Applicant's Guide.

## PENT COOPERATION TREATY

## PCT

## INTERNATIONAL SEARCH REPORT

(PCT Article 18 and Rules 43 and 44)

Applicant's or agent's file reference <b>PU3682W0</b>	<b>FOR FURTHER ACTION</b>	see Notification of Transmittal of International Search Report (Form PCT/ISA/220) as well as, where applicable, item 5 below.
International application No. <b>PCT/US 00/ 11418</b>	International filing date ( <i>day/month/year</i> ) <b>28/04/2000</b>	(Earliest) Priority Date ( <i>day/month/year</i> ) <b>30/04/1999</b>
Applicant <b>GLAXO GROUP LIMITED.</b>		

This International Search Report has been prepared by this International Searching Authority and is transmitted to the applicant according to Article 18. A copy is being transmitted to the International Bureau.

This International Search Report consists of a total of 3 sheets.

It is also accompanied by a copy of each prior art document cited in this report.

**1. Basis of the report**

- a. With regard to the language, the international search was carried out on the basis of the international application in the language in which it was filed, unless otherwise indicated under this item.
  - the international search was carried out on the basis of a translation of the international application furnished to this Authority (Rule 23.1(b)).
- b. With regard to any nucleotide and/or amino acid sequence disclosed in the international application, the international search was carried out on the basis of the sequence listing :
  - contained in the international application in written form.
  - filed together with the international application in computer readable form.
  - furnished subsequently to this Authority in written form.
  - furnished subsequently to this Authority in computer readable form.
  - the statement that the subsequently furnished written sequence listing does not go beyond the disclosure in the international application as filed has been furnished.
  - the statement that the information recorded in computer readable form is identical to the written sequence listing has been furnished

2.  Certain claims were found unsearchable (See Box I).

3.  Unity of Invention is lacking (see Box II).

4. With regard to the title,

- the text is approved as submitted by the applicant.
- the text has been established by this Authority to read as follows:

5. With regard to the abstract,

- the text is approved as submitted by the applicant.
- the text has been established, according to Rule 38.2(b), by this Authority as it appears in Box III. The applicant may, within one month from the date of mailing of this international search report, submit comments to this Authority.

6. The figure of the drawings to be published with the abstract is Figure No.

- as suggested by the applicant.
- because the applicant failed to suggest a figure.
- because this figure better characterizes the invention.

1

None of the figures.

PCT

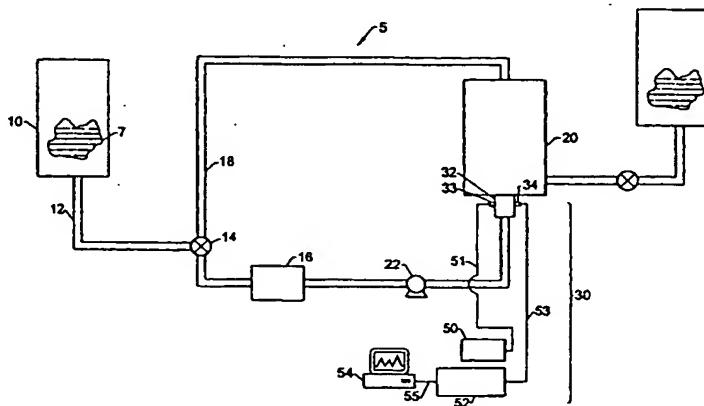
WORLD INTELLECTUAL PROPERTY ORGANIZATION  
International Bureau

PU3682WO

## INTERNATIONAL APPLICATION PUBLISHED UNDER THE PATENT COOPERATION TREATY (PCT)

(51) International Patent Classification <sup>7</sup> :  G01N 21/35		A1	(11) International Publication Number: WO 00/67000  (43) International Publication Date: 9 November 2000 (09.11.00)
(21) International Application Number: PCT/US00/11418		(74) Agents: LEVY, David, J. et al.; Glaxo Wellcome Inc., Five Moore Drive, P.O. Box 13398, Research Triangle Park, NC 27709-3398 (US).	
(22) International Filing Date: 28 April 2000 (28.04.00)		(81) Designated States: AE, AG, AL, AM, AT, AU, AZ, BA, BB, BG, BR, BY, CA, CH, CN, CR, CU, CZ, DE, DK, DM, DZ, EE, ES, FI, GB, GD, GE, GH, GM, HR, HU, ID, IL, IN, IS, JP, KE, KG, KP, KR, KZ, LC, LK, LR, LS, LT, LU, LV, MA, MD, MG, MK, MN, MW, MX, NO, NZ, PL, PT, RO, RU, SD, SE, SG, SI, SK, SL, TJ, TM, TR, TT, TZ, UA, UG, US, UZ, VN, YU, ZA, ZW, ARIPO patent (GH, GM, KE, LS, MW, SD, SL, SZ, TZ, UG, ZW), Eurasian patent (AM, AZ, BY, KG, KZ, MD, RU, TJ, TM), European patent (AT, BE, CH, CY, DE, DK, ES, FI, FR, GB, GR, IE, IT, LU, MC, NL, PT, SE), OAPI patent (BF, BJ, CF, CG, CI, CM, GA, GN, GW, ML, MR, NE, SN, TD, TG).	
(30) Priority Data: 60/132,042 ✓ 30 April 1999 (30.04.99) US		(71) Applicant (for all designated States except US): GLAXO GROUP LIMITED [GB/GB]; Glaxo Wellcome House, Berkeley Avenue, Greenford, Middlesex UB6 0NN (GB).	
(63) Related by Continuation (CON) or Continuation-in-Part (CIP) to Earlier Application US Filed on 30 April 1999 (30.04.99)		(72) Inventors; and  (75) Inventors/Applicants (for US only): WALKER, Dwight, Sherod [US/US]; Glaxo Wellcome Inc., Five Moore Drive, P.O. Box 13398, Research Triangle Park, NC 27709 (US). MASCHO, John, Anderson, Jr. [US/US]; Glaxo Wellcome Inc., Five Moore Drive, P.O. Box 13398, Research Triangle Park, NC 27709 (US).	
<p><b>Published</b></p> <p><i>With international search report.</i>  <i>Before the expiration of the time limit for amending the claims and to be republished in the event of the receipt of amendments.</i></p>			

## (54) Title: METHOD AND SYSTEM FOR DETECTING TRACE MATERIALS IN CRYOGENIC LIQUIDS



## (57) Abstract

A method for qualitative and quantitative determination of trace impurities in a cryogenic liquid, comprising the steps of (i) measuring the absorption spectrum of the cryogenic liquid by passing light in the infrared region through the cryogenic liquid, the cryogenic liquid absorption spectrum having a first reference energy, (ii) measuring the absorption spectrum of at least one impurity alone by passing light in the infrared region through the impurity, (iii) passing a cryogenic liquid sample into a flow cell, wherein the maximum pressure drop of the cryogenic liquid sample across said flow cell is in the range of 0.5 to 5.0 lb./in.<sup>2</sup>, (iv) measuring the absorption spectra of the cryogenic liquid sample by passing light in the infrared region through the cryogenic liquid sample while the cryogenic liquid sample is within the cell, (v) comparing the cryogenic liquid sample absorption spectra to the cryogenic liquid and impurity spectra, (vi) confirming the presence of the sample absorption spectrum associated with the impurity, the sample absorption spectrum associated with the impurity having a second reference energy, and (vii) determining the concentration (C) of the impurity in the cryogenic liquid sample by the following relationship,  $kC = \log \text{second reference energy}/\text{first reference energy}$  where k is a fixed proportionality constant.

**FOR THE PURPOSES OF INFORMATION ONLY**

Codes used to identify States party to the PCT on the front pages of pamphlets publishing international applications under the PCT.

AL	Albania	ES	Spain	LS	Lesotho	SI	Slovenia
AM	Armenia	FI	Finland	LT	Lithuania	SK	Slovakia
AT	Austria	FR	France	LU	Luxembourg	SN	Senegal
AU	Australia	GA	Gabon	LV	Latvia	SZ	Swaziland
AZ	Azerbaijan	GB	United Kingdom	MC	Monaco	TD	Chad
BA	Bosnia and Herzegovina	GE	Georgia	MD	Republic of Moldova	TG	Togo
BB	Barbados	GH	Ghana	MG	Madagascar	TJ	Tajikistan
BE	Belgium	GN	Guinea	MK	The former Yugoslav Republic of Macedonia	TM	Turkmenistan
BF	Burkina Faso	GR	Greece	ML	Mali	TR	Turkey
BG	Bulgaria	HU	Hungary	MN	Mongolia	TT	Trinidad and Tobago
BJ	Benin	IE	Ireland	MR	Mauritania	UA	Ukraine
BR	Brazil	IL	Israel	MW	Malawi	UG	Uganda
BY	Belarus	IS	Iceland	MX	Mexico	US	United States of America
CA	Canada	IT	Italy	NE	Niger	UZ	Uzbekistan
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CG	Congo	KE	Kenya	NO	Norway	YU	Yugoslavia
CH	Switzerland	KG	Kyrgyzstan	NZ	New Zealand	ZW	Zimbabwe
CI	Côte d'Ivoire	KP	Democratic People's Republic of Korea	PL	Poland		
CM	Cameroon	KR	Republic of Korea	PT	Portugal		
CN	China	KZ	Republic of Korea	RO	Romania		
CU	Cuba	LC	Kazakhstan	RU	Russian Federation		
CZ	Czech Republic	LI	Saint Lucia	SD	Sudan		
DE	Germany	LK	Liechtenstein	SE	Sweden		
DK	Denmark	LR	Sri Lanka	SG	Singapore		
EE	Estonia						

**PCT****REQUEST**

The undersigned requests that the present international application be processed according to the Patent Cooperation Treaty.

For receiving office use only

International Application No.

International Filing Date

Name of receiving Office and "PCT International Application"

Applicant's or agent's file reference  
(if desired) (12 characters maximum) PU3682WO**Box No. I TITLE OF INVENTION**  
**METHOD AND SYSTEM FOR DETECTING TRACE MATERIALS IN CRYOGENIC LIQUIDS****Box No. II APPLICANT**

Name and address: (Family name followed by given name; for a legal entity, full official designation. The address must include postal code and name of country. The country of the address indicated in this Box is the applicant's State (that is, country) of residence if no State of residence is indicated below.)

Glaxo Group Limited  
Glaxo Wellcome House  
Berkeley Avenue  
Greenford, Middlesex  
UB6 0NN  
GB

 This person is also inventor.Telephone No.  
919-483-2370 (US number)Facsimile No.  
919-483-7988 (US number)

Teleprinter No.

State (that is, country) of nationality:  
GBState (that is, country) of residence:  
GBThis person is applicant  all designated States  all designated States except the United States of America  the United States of America only  the States indicated in the Supplemental Box for the purposes of:**Box No. III FURTHER APPLICANT(S) AND/OR (FURTHER) INVENTOR(S)**

Name and address: (Family name followed by given name; for a legal entity, full official designation. The address must include postal code and name of country. The country of the address indicated in this Box is the applicant's State (that is, country) of residence if no State of residence is indicated below.)

WALKER, Dwight Sherod  
c/o Glaxo Wellcome Inc.  
Five Moore Drive, PO Box 13398  
Research Triangle Park, NC 27709  
US

This person is:

 applicant only applicant and inventor inventor only (If this check-box is marked, do not fill in below.)State (that is, country) of nationality:  
USState (that is, country) of residence:  
USThis person is applicant  all designated States  all designated States except the United States of America  the United States of America only  the States indicated in the Supplemental Box for the purposes of: Further applicants and/or (further) inventors are indicated on a continuation sheet.**Box No. IV AGENT OR COMMON REPRESENTATIVE; OR ADDRESS FOR CORRESPONDENCE**

The person identified below is hereby/has been appointed to act on behalf of the applicant(s) before the competent International Authorities as:

 agent common representative

Name and address: (Family name followed by given name; for a legal entity, full official designation. The address must include postal code and name of country.)

Telephone No.  
919-483-2370

LEVY, David J.; DADSWELL, Charles, E.; GRASSLER, Frank P.; BRINK, Robert H.; RIEK, James P.; PRUS, Karen, L.; SELBY, Elizabeth; MORGAN, Lorie Ann; BENNETT, Virginia, C.; ROGERS, Christopher R.; DEPPENBROCK, Bonnie L. and LEMANOWICZ, John L. all Glaxo Wellcome Inc., Five Moore Drive, PO Box 13398, Research Triangle Park, NC 27709-3398, US

Facsimile No.  
919-483-7988

Teleprinter No.

Address for correspondence: Mark this check-box where no agent or common representative is/has been appointed and the space above is used instead to indicate a special address to which correspondence should be sent.

Express Mail Label No.:  
EL395892697US

## Continuation of Box No. III FURTHER APPLICANTS AND/OR (FURTHER) INVENTOR(S)

*If none of the following sub-boxes is used, this sheet is not to be included in the request.*

Name and address: (Family name followed by given name; for a legal entity, full official designation. The address must include postal code and name of country. The country of the address indicated in this Box is the applicant's State (that is, country) of residence if no State of residence is indicated below.)

MASCHO, John Anderson, Jr.  
c/o Glaxo Wellcome Inc.  
Five Moore Drive, PO Box 13398  
Research Triangle Park, NC 27709  
US

This person is:

applicant only  
 applicant and inventor  
 inventor only (If this check-box is marked, do not fill in below.)

State (that is, country) of nationality:  
USState (that is, country) of residence:  
US

This person is applicant  all designated States  all designated States except the United States of America  the United States of America only  the States indicated in the Supplemental Box

Name and address: (Family name followed by given name; for a legal entity, full official designation. The address must include postal code and name of country. The country of the address indicated in this Box is the applicant's State (that is, country) of residence if no State of residence is indicated below.)

This person is:

applicant only  
 applicant and inventor  
 inventor only (If this check-box is marked, do not fill in below.)

State (that is, country) of nationality:

State (that is, country) of residence:

This person is applicant  all designated States  all designated States except the United States of America  the United States of America only  the States indicated in the Supplemental Box

Name and address: (Family name followed by given name; for a legal entity, full official designation. The address must include postal code and name of country. The country of the address indicated in this Box is the applicant's State (that is, country) of residence if no State of residence is indicated below.)

This person is:

applicant only  
 applicant and inventor  
 inventor only (If this check-box is marked, do not fill in below.)

State (that is, country) of nationality:

State (that is, country) of residence:

This person is applicant  all designated States  all designated States except the United States of America  the United States of America only  the States indicated in the Supplemental Box

Name and address: (Family name followed by given name; for a legal entity, full official designation. The address must include postal code and name of country. The country of the address indicated in this Box is the applicant's State (that is, country) of residence if no State of residence is indicated below.)

This person is:

applicant only  
 applicant and inventor  
 inventor only (If this check-box is marked, do not fill in below.)

State (that is, country) of nationality:

State (that is, country) of residence:

This person is applicant  all designated States  all designated States except the United States of America  the United States of America only  the States indicated in the Supplemental Box

Further applicants and/or (further) inventors are indicated on another continuation sheet.

**Box No.V DESIGNATION OF STATES**

The following designations are hereby made under Rule 4.9(a) (mark the applicable check-boxes, at least one must be marked):

**Regional Patent**

- AP ARIPO Patent: GH Ghana, GM Gambia, KE Kenya, LS Lesotho, MW Malawi, SD Sudan, SL Sierra Leone, SZ Swaziland, TZ United Republic of Tanzania, UG Uganda, ZW Zimbabwe, and any other State which is a Contracting State of the Harare Protocol and of the PCT
- EA Eurasian Patent: AM Armenia, AZ Azerbaijan, BY Belarus, KG Kyrgyzstan, KZ Kazakhstan, MD Republic of Moldova, RU Russian Federation, TJ Tajikistan, TM Turkmenistan, and any other State which is a Contracting State of the Eurasian Patent Convention and of the PCT
- EP European Patent: AT Austria, BE Belgium, CH and LI Switzerland and Liechtenstein, CY Cyprus, DE Germany, DK Denmark, ES Spain, FI Finland, FR France, GB United Kingdom, GR Greece, IE Ireland, IT Italy, LU Luxembourg, MC Monaco, NL Netherlands, PT Portugal, SE Sweden, and any other State which is a Contracting State of the European Patent Convention and of the PCT
- OA OAPI Patent: BF Burkina Faso, BJ Benin, CF Central African Republic, CG Congo, CI Côte d'Ivoire, CM Cameroon, GA Gabon, GN Guinea, GW Guinea-Bissau, ML Mali, MR Mauritania, NE Niger, SN Senegal, TD Chad, TG Togo, and any other State which is a member State of OAPI and a Contracting State of the PCT (if other kind of protection or treatment desired, specify on dotted line) .....

**National Patent (if other kind of protection or treatment desired, specify on dotted line):**

<input checked="" type="checkbox"/> AE United Arab Emirates .....	<input checked="" type="checkbox"/> LR Liberia .....
<input checked="" type="checkbox"/> AL Albania .....	<input checked="" type="checkbox"/> LS Lesotho .....
<input checked="" type="checkbox"/> AM Armenia .....	<input checked="" type="checkbox"/> LT Lithuania .....
<input checked="" type="checkbox"/> AT Austria .....	<input checked="" type="checkbox"/> LU Luxembourg .....
<input checked="" type="checkbox"/> AU Australia .....	<input checked="" type="checkbox"/> LV Latvia .....
<input checked="" type="checkbox"/> AZ Azerbaijan .....	<input checked="" type="checkbox"/> MA Morocco .....
<input checked="" type="checkbox"/> BA Bosnia and Herzegovina .....	<input checked="" type="checkbox"/> MD Republic of Moldova .....
<input checked="" type="checkbox"/> BB Barbados .....	<input checked="" type="checkbox"/> MG Madagascar .....
<input checked="" type="checkbox"/> BG Bulgaria .....	<input checked="" type="checkbox"/> MK The former Yugoslav Republic of Macedonia .....
<input checked="" type="checkbox"/> BR Brazil .....	.....
<input checked="" type="checkbox"/> BY Belarus .....	<input checked="" type="checkbox"/> MN Mongolia .....
<input checked="" type="checkbox"/> CA Canada .....	<input checked="" type="checkbox"/> MW Malawi .....
<input checked="" type="checkbox"/> CH and LI Switzerland and Liechtenstein .....	<input checked="" type="checkbox"/> MX Mexico .....
<input checked="" type="checkbox"/> CN China .....	<input checked="" type="checkbox"/> NO Norway .....
<input checked="" type="checkbox"/> CR Costa Rica .....	<input checked="" type="checkbox"/> NZ New Zealand .....
<input checked="" type="checkbox"/> CU Cuba .....	<input checked="" type="checkbox"/> PL Poland .....
<input checked="" type="checkbox"/> CZ Czech Republic .....	<input checked="" type="checkbox"/> PT Portugal .....
<input checked="" type="checkbox"/> DE Germany .....	<input checked="" type="checkbox"/> RO Romania .....
<input checked="" type="checkbox"/> DK Denmark .....	<input checked="" type="checkbox"/> RU Russian Federation .....
<input checked="" type="checkbox"/> DM Dominica .....	<input checked="" type="checkbox"/> SD Sudan .....
<input checked="" type="checkbox"/> EE Estonia .....	<input checked="" type="checkbox"/> SE Sweden .....
<input checked="" type="checkbox"/> ES Spain .....	<input checked="" type="checkbox"/> SG Singapore .....
<input checked="" type="checkbox"/> FI Finland .....	<input checked="" type="checkbox"/> SI Slovenia .....
<input checked="" type="checkbox"/> GB United Kingdom .....	<input checked="" type="checkbox"/> SK Slovakia .....
<input checked="" type="checkbox"/> GD Grenada .....	<input checked="" type="checkbox"/> SL Sierra Leone .....
<input checked="" type="checkbox"/> GE Georgia .....	<input checked="" type="checkbox"/> TJ Tajikistan .....
<input checked="" type="checkbox"/> GH Ghana .....	<input checked="" type="checkbox"/> TM Turkmenistan .....
<input checked="" type="checkbox"/> GM Gambia .....	<input checked="" type="checkbox"/> TR Turkey .....
<input checked="" type="checkbox"/> HR Croatia .....	<input checked="" type="checkbox"/> TT Trinidad and Tobago .....
<input checked="" type="checkbox"/> HU Hungary .....	<input checked="" type="checkbox"/> TZ United Republic of Tanzania .....
<input checked="" type="checkbox"/> ID Indonesia .....	<input checked="" type="checkbox"/> UA Ukraine .....
<input checked="" type="checkbox"/> IL Israel .....	<input checked="" type="checkbox"/> UG Uganda .....
<input checked="" type="checkbox"/> IN India .....	<input checked="" type="checkbox"/> US United States of America .....
<input checked="" type="checkbox"/> IS Iceland .....	Continuation-in-part .....
<input checked="" type="checkbox"/> JP Japan .....	<input checked="" type="checkbox"/> UZ Uzbekistan .....
<input checked="" type="checkbox"/> KE Kenya .....	<input checked="" type="checkbox"/> VN Viet Nam .....
<input checked="" type="checkbox"/> KG Kyrgyzstan .....	<input checked="" type="checkbox"/> YU Yugoslavia .....
<input checked="" type="checkbox"/> KP Democratic People's Republic of Korea .....	<input checked="" type="checkbox"/> ZA South Africa .....
<input checked="" type="checkbox"/> KR Republic of Korea .....	<input checked="" type="checkbox"/> ZW Zimbabwe .....
<input checked="" type="checkbox"/> KZ Kazakhstan .....	Check-boxes reserved for designating States which have become party to the PCT after issuance of this sheet:
<input checked="" type="checkbox"/> LC Saint Lucia .....	<input checked="" type="checkbox"/> AG Antigua & Barbuda .....
<input checked="" type="checkbox"/> LK Sri Lanka .....	<input checked="" type="checkbox"/> DZ Algeria .....

**Precautionary Designation Statement:** In addition to the designations made above, the applicant also makes under Rule 4.9(b) all other designations which would be permitted under the PCT except any designation(s) indicated in the Supplemental Box as being excluded from the scope of this statement. The applicant declares that those additional designations are subject to confirmation and that any designation which is not confirmed before the expiration of 15 months from the priority date is to be regarded as withdrawn by the applicant at the expiration of that time limit. (Confirmation(including fees) must reach the receiving Office within the 15-month time

**Supplemental Box***If the Supplemental Box is not used, this sheet need not be included in the request.*

**1. If, in any of the Boxes, the space is insufficient to furnish all the information: in such case, write "Continuation of Box No. ...." (indicate the number of the Box) and furnish the information in the same manner as required according to the captions of the Box in which the space was insufficient, in particular:**

- (i) if more than two persons are involved as applicants and/or inventors and no "continuation sheet" is available: in such case, write "Continuation of Box No. III" and indicate for each additional person the same type of information as required in Box No. III. The country of the address indicated in this Box is the applicant's State (that is, country) of residence if no State of residence is indicated below;
- (ii) if, in Box No. II or in any of the sub-boxes of Box No. III, the indication "the States indicated in the Supplemental Box" is checked: in such case, write "Continuation of Box No. II" or "Continuation of Box No. III" or "Continuation of Boxes No. II and No. III" (as the case may be), indicate the name of the applicant(s) involved and, next to (each) such name, the State(s) (and/or, where applicable, ARIPO, Eurasian, European or OAPI patent) for the purposes of which the named person is applicant;
- (iii) if, in Box No. II or in any of the sub-boxes of Box No. III, the inventor or the inventor/applicant is not inventor for the purposes of all designated States or for the purposes of the United States of America: in such case, write "Continuation of Box No. II" or "Continuation of Box No. III" or "Continuation of Boxes No. II and No. III" (as the case may be), indicate the name of the inventor(s) and, next to (each) such name, the State(s) (and/or, where applicable, ARIPO, Eurasian, European or OAPI patent) for the purposes of which the named person is inventor;
- (iv) if, in addition to the agent(s) indicated in Box IV, there are further agents: in such case, write "Continuation of Box No. IV" and indicate for each further agent the same type of information as required in Box No. IV;
- (v) if, in Box No. V, the name of any State (or OAPI) is accompanied by the indication "patent of addition," or "certificate of addition," or if, in Box No. V, the name of the United States of America is accompanied by an indication "continuation" or "continuation-in-part": in such case, write "Continuation of Box No. V" and the name of each State involved (or OAPI), and after the name of each such State (or OAPI), the number of the parent title or parent application and the date of grant of the parent title or filing of the parent application;
- (vi) if, in Box No. VI, there are more than three earlier applications whose priority is claimed: in such case, write "Continuation of Box No. VI" and indicate for each additional earlier application the same type of information as required in Box No. VI;
- (vii) if, in Box No. VI, the earlier application is an ARIPO application: in such case, write "Continuation of Box No. VI", specify the number of the item corresponding to that earlier application and indicate at least one country party to the Paris Convention for the Protection of Industrial Property or one Member of the World Trade Organization for which that earlier application was filed.

**2. If, with regard to the precautionary designation statement contained in Box No. V, the applicant wishes to exclude any State(s) from the scope of that statement: in such case, write "Designation(s) excluded from precautionary designation statement" and indicate the name or two-letter code of each State so excluded.**

**3. If the applicant claims, in respect of any designated Office, the benefits of provisions of the national law concerning non-prejudicial disclosures or exceptions to lack of novelty: in such case, write "Statement concerning non-prejudicial disclosures or exceptions to lack of novelty" and furnish that statement below.**

Continuation of Box IV:

HESKETH, Alan (GB); CRAWLEY, Karen (GB); DOLTON, Peter I. (GB); DAWSON, Hugh B. (GB); FILLER, Wendy Anne. (GB); FISHER, Christiane Elizabeth (GB); HACKETT, Ruth Elizabeth (GB); HAMMETT, Audrey G. C. (GB); HOCKLEY, Siân Catherine (GB); LANE, Graham M. H. (GB); LEAROYD, Stephanie Anne (GB); QUILLIN, Helen Kaye (GB); REED, Michael A. (GB); REES, Marion (GB); STOTT, Michael John (GB) TEUTEN, Andrew J. (GB); THORNLEY, Rachel M. (GB); and VOLCKMAN, Janis Florence (GB) c/o Glaxo Wellcome plc, Glaxo Wellcome House, Berkeley Avenue, Greenford, Middlesex, UB6 0NN, Great Britain

Continuation of Box V::

United States of America: Provisional 60/132,042; 30 April 1999 (30.04.99)

Box No. VI PRIORITY CLAIM		<input type="checkbox"/> Further priority claims are indicated in the Supplemental Box.		
Filing date of earlier application (day/month/year)	Number of earlier application	Where each application is:		
		national application: country	regional application: regional Office	international application: receiving Office
item (1) 30/04/99 30 April 1999	60/132,042	US		
item (2)				
item (3)				

The receiving Office is requested to prepare and transmit to the International Bureau a certified copy of the earlier application(s) (only if the earlier application was filed with the Office which for the purposes of the present international application is the receiving Office) identified above as item(s): (1)  
 \* Where the earlier application is an ARIPO application, it is mandatory to indicate in the Supplemental Box at least one country party to the Paris Convention for the Protection of Industrial Property for which that earlier application was filed (Rule 4.10(b)(ii)). See Supplemental Box.

Box No. VII INTERNATIONAL SEARCHING AUTHORITY		Request to use results of earlier search; reference to that search (if an earlier search has been carried out by or requested from the International Searching Authority):		
Choice of International Searching Authority (ISA) (if two or more International Searching Authorities are competent to carry out the international search, indicate the Authority chosen; the two-letter code may be used):	Date (day/month/year)	Number	Country (or regional Office)	
ISA/EP				

Box No. VIII CHECK LIST: LANGUAGE OF FILING			
This international application contains the following number of sheets:		This international application is accompanied by the item(s) marked below:	
request	: 5	1. <input checked="" type="checkbox"/> fee calculation sheet	
description (excluding sequence listing part)	: 11	2. <input checked="" type="checkbox"/> separate signed power of attorney (3)	
claims	: 6	3. <input type="checkbox"/> copy of general power of attorney; reference number, if any:	
abstract	: 1	4. <input type="checkbox"/> statement explaining lack of signature	
drawings	: 4	5. <input type="checkbox"/> priority document(s) identified in Box No. VI as item(s):	
sequence listing part of description	:	6. <input type="checkbox"/> translation of international application into (language):	
Total number of sheets	: 27	7. <input type="checkbox"/> separate indications concerning deposited microorganism or other biological material	
		8. <input type="checkbox"/> nucleotide and/or amino acid sequence listing in computer readable form	
		9. <input checked="" type="checkbox"/> other (specify): copy of POA giving DJL right to sign for GGL	

Figure of the drawings which should accompany the abstract:	Language of filing of the international application:	English
---	--	---------

Box No. IX SIGNATURE OF APPLICANT OR AGENT		
Next to each signature, indicate the name of the person signing and the capacity in which the person signs (if such capacity is not obvious from reading the request).		
 Charles E. Dadswell Agent for Applicant		

For receiving Office use only		
1. Date of actual receipt of the purported international application:		
3. Corrected date of actual receipt due to later but timely received papers or drawings completing the purported international application:		
4. Date of timely receipt of the required corrections under PCT Article 11(2):		
5. International Searching Authority (if two or more are competent):	ISA/	6. <input type="checkbox"/> Transmittal of search copy delayed until search fee is paid.

2. Drawings:

 received: not received:

For International Bureau use only		
Date of receipt of the record copy by the International Bureau:		

# PCT

## FEE CALCULATION SHEET

### Annex to the Request

For receiving Office use only

International application No.

Date stamp of the receiving Office

Applicant's or agent's  
file reference

PU3682WO

Applicant  
Glaxo Group Limited

#### CALCULATION OF PRESCRIBED FEES

1. TRANSMITTAL FEE .....

240.00

T

2. SEARCH FEE .....

990.00

S

International search to be carried out by

IS/EP

(If two or more International Searching Authorities are competent in relation to the international application, indicate the name of the Authority which is chosen to carry out the international search.)

3. INTERNATIONAL FEE

##### Basic Fee

The international application contains 27 sheets.

first 30 sheets . . . . . 427.00 b1

0 x = 0.00 b2

remaining sheets additional amount

Add amounts entered at b1 and b2 and enter total at B . . . . . 427.00 B

##### Designation Fees

The international application contains 106 designations.

8 x 92.00 = 736.00 D

number of designation fees amount of designation fee payable (maximum 8)

Add amounts entered at B and D and enter total at I . . . . . 1,163.00 I

(Applicants from certain States are entitled to a reduction of 75% of the international fee. Where the applicant(s) or all applicants are so entitled, the total to be entered at I is 25% of the sum of the amounts entered at B and D.)

4. FEE FOR PRIORITY DOCUMENT (if applicable) .....

15.00

P

5. TOTAL FEES PAYABLE .....

2,408.00

TOTAL

The designation fees are not paid at this time.

#### MODE OF PAYMENT

authorization to charge  
deposit account (see below)  
 cheque  
 postal money order

bank draft  
 cash  
 revenue stamps

coupons  
 other (specify):

#### DEPOSIT ACCOUNT AUTHORIZATION (this mode of payment may not be available at all receiving Offices)

The RO/ US  is hereby authorized to charge the total fees indicated above to my deposit account.

(this check-box may be marked only if the conditions for deposit accounts of the receiving Office so permit) is hereby authorized to charge any deficiency or credit any overpayment in the total fees indicated above to my deposit account.

is hereby authorized to charge the fee for preparation and transmittal of the priority document to the International Bureau of WIPO to my deposit account.

07-1392

April 2000

Deposit Account No.

Date (day/month/year)

Signature

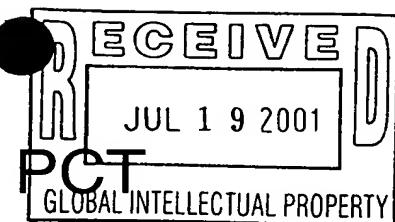
## PATENT COOPERATION TREATY

IPST/CED/H

From the  
INTERNATIONAL PRELIMINARY EXAMINING AUTHORITY

To:

Levy, David  
GLAXO WELLCOME INC.  
Global Intellectual Property Dept.  
Five Moore Drive  
PO Box 13398  
Research Triangle Park, NC 27709  
ETATS-UNIS D'AMERIQUE



NOTIFICATION OF TRANSMITTAL OF  
THE INTERNATIONAL PRELIMINARY  
EXAMINATION REPORT

(PCT Rule 71.1)

Date of mailing (day/month/year)	25.06.2001
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Applicant's or agent's file reference PU3682WO	<b>IMPORTANT NOTIFICATION</b>	
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International application No. PCT/US00/11418	International filing date (day/month/year) 28/04/2000	Priority date (day/month/year) 30/04/1999
---	--	--

Applicant GLAXO GROUP LIMITED et al.
---

1. The applicant is hereby notified that this International Preliminary Examining Authority transmits herewith the international preliminary examination report and its annexes, if any, established on the international application.
2. A copy of the report and its annexes, if any, is being transmitted to the International Bureau for communication to all the elected Offices.
3. Where required by any of the elected Offices, the International Bureau will prepare an English translation of the report (but not of any annexes) and will transmit such translation to those Offices.

#### 4. REMINDER

The applicant must enter the national phase before each elected Office by performing certain acts (filing translations and paying national fees) within 30 months from the priority date (or later in some Offices) (Article 39(1)) (see also the reminder sent by the International Bureau with Form PCT/IB/301).

Where a translation of the international application must be furnished to an elected Office, that translation must contain a translation of any annexes to the international preliminary examination report. It is the applicant's responsibility to prepare and furnish such translation directly to each elected Office concerned.

For further details on the applicable time limits and requirements of the elected Offices, see Volume II of the PCT Applicant's Guide.

Name and mailing address of the IPEA/  European Patent Office D-80298 Munich Tel. +49 89 2399 - 0 Tx: 523656 epmu d Fax: +49 89 2399 - 4465	Authorized officer  Weber, R  Tel. +49 89 2399-2382
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## PATENT COOPERATION TREATY

## PCT

## INTERNATIONAL PRELIMINARY EXAMINATION REPORT

## (PCT Article 36 and Rule 70)

Applicant's or agent's file reference PU3682WO	<b>FOR FURTHER ACTION</b>		See Notification of Transmittal of International Preliminary Examination Report (Form PCT/IPEA/416)
International application No. PCT/US00/11418	International filing date (day/month/year) 28/04/2000	Priority date (day/month/year) 30/04/1999	
International Patent Classification (IPC) or national classification and IPC G01N21/35			
<p><b>Applicant</b>  <b>GLAXO GROUP LIMITED et al.</b></p>			
<p>1. This international preliminary examination report has been prepared by this International Preliminary Examining Authority and is transmitted to the applicant according to Article 36.</p> <p>2. This REPORT consists of a total of 7 sheets, including this cover sheet.</p> <p><input type="checkbox"/> This report is also accompanied by ANNEXES, i.e. sheets of the description, claims and/or drawings which have been amended and are the basis for this report and/or sheets containing rectifications made before this Authority (see Rule 70.16 and Section 607 of the Administrative Instructions under the PCT).</p> <p>These annexes consist of a total of sheets.</p>			
<p>3. This report contains indications relating to the following items:</p> <ul style="list-style-type: none"> <li>I    <input checked="" type="checkbox"/> Basis of the report</li> <li>II    <input type="checkbox"/> Priority</li> <li>III    <input type="checkbox"/> Non-establishment of opinion with regard to novelty, inventive step and industrial applicability</li> <li>IV    <input type="checkbox"/> Lack of unity of invention</li> <li>V    <input checked="" type="checkbox"/> Reasoned statement under Article 35(2) with regard to novelty, inventive step or industrial applicability; citations and explanations supporting such statement</li> <li>VI    <input type="checkbox"/> Certain documents cited</li> <li>VII    <input checked="" type="checkbox"/> Certain defects in the international application</li> <li>VIII    <input checked="" type="checkbox"/> Certain observations on the international application</li> </ul>			

Date of submission of the demand  21/11/2000	Date of completion of this report  25.06.2001
Name and mailing address of the international preliminary examining authority:   European Patent Office D-80298 Munich Tel. +49 89 2399 - 0 Tx: 523656 epmu d Fax: +49 89 2399 - 4465	Authorized officer  Stuebner, B  Telephone No. +49 89 2399 2179



**INTERNATIONAL PRELIMINARY  
EXAMINATION REPORT**

International application No. PCT/US00/11418

**I. Basis of the report**

1. With regard to the elements of the international application (*Replacement sheets which have been furnished to the receiving Office in response to an invitation under Article 14 are referred to in this report as "originally filed" and are not annexed to this report since they do not contain amendments (Rules 70.16 and 70.17)*):

**Description, pages:**

1-11                   as originally filed

**Claims, No.:**

1-29                   as originally filed

**Drawings, sheets:**

1/4-4/4               as originally filed

2. With regard to the language, all the elements marked above were available or furnished to this Authority in the language in which the international application was filed, unless otherwise indicated under this item.

These elements were available or furnished to this Authority in the following language: , which is:

- the language of a translation furnished for the purposes of the international search (under Rule 23.1(b)).
- the language of publication of the international application (under Rule 48.3(b)).
- the language of a translation furnished for the purposes of international preliminary examination (under Rule 55.2 and/or 55.3).

3. With regard to any nucleotide and/or amino acid sequence disclosed in the international application, the international preliminary examination was carried out on the basis of the sequence listing:

- contained in the international application in written form.
- filed together with the international application in computer readable form.
- furnished subsequently to this Authority in written form.
- furnished subsequently to this Authority in computer readable form.
- The statement that the subsequently furnished written sequence listing does not go beyond the disclosure in the international application as filed has been furnished.
- The statement that the information recorded in computer readable form is identical to the written sequence listing has been furnished.

4. The amendments have resulted in the cancellation of:

- the description,       pages:
- the claims,           Nos.:

**INTERNATIONAL PRELIMINARY  
EXAMINATION REPORT**

International application No. PCT/US00/11418

the drawings,      sheets:

5.  This report has been established as if (some of) the amendments had not been made, since they have been considered to go beyond the disclosure as filed (Rule 70.2(c)):

*(Any replacement sheet containing such amendments must be referred to under item 1 and annexed to this report.)*

6. Additional observations, if necessary:

**V. Reasoned statement under Article 35(2) with regard to novelty, inventive step or industrial applicability; citations and explanations supporting such statement**

**1. Statement**

Novelty (N)	Yes:      Claims 1-29
	No:      Claims
Inventive step (IS)	Yes:      Claims
	No:      Claims 1-29
Industrial applicability (IA)	Yes:      Claims 1-29
	No:      Claims

**2. Citations and explanations  
see separate sheet**

**VII. Certain defects in the international application**

The following defects in the form or contents of the international application have been noted:  
**see separate sheet**

**VIII. Certain observations on the international application**

The following observations on the clarity of the claims, description, and drawings or on the question whether the claims are fully supported by the description, are made:  
**see separate sheet**

**INTERNATIONAL PRELIMINARY  
EXAMINATION REPORT - SEPARATE SHEET**

International application No. PCT/US00/11418

**Re Item V**

Reasoned statement under Rule 66.2(a)(ii) with regard to novelty, inventive step or industrial applicability; citations and explanations supporting such statement

1. The following documents (D) are referred to in this communication:

D1: EP-A-0425446  
D2: US-A-4264814  
D3: US-A-5457528

2. In D1 (see e.g. col.2, I.38 to col.3, I.24; Cls.6, 7; Fig.5) a method is described comprising nearly all steps corresponding to Claim 1.

The method according to Claim 1 differs therefrom in the following steps:

- a) the liquid is a cryogenic liquid;
- b) not a reflection but an absorption spectrum is measured; and
- c) a spectrum of the "impurity alone" and not of a sample with "a maximum degree of the impurities" is determined.

The use of an absorbance or absorption spectrum is a well-known alternative to a reflection spectrum; see D1, col.1, II.41, 42 or D2, col.2, II.22, 23 or D3, col.3, I.1.

Also the use of a reference sample with the "impurity alone" instead of a sample with "a maximum degree of the impurities" is merely a slight variation the skilled person would select, in accordance with circumstances, without the exercise of inventive skill, in order to solve the problem posed.

Finally, the measurement of spectra of cryogenic liquids is also well-known in D2 (see e.g the abstract). Therefore, the skilled person would obviously apply the teaching of D1 to a cryogenic liquid.

In view of the paragraphs above, the skilled person would regard it a normal design procedure to combine all the features set out in Claim 1. Thus, the subject-matter of Claim 1 does not involve an inventive step and does not satisfy the criterion set forth in Article 33(3) PCT.

3. With regard to Claim 1 the independent method Claim 10 additionally discloses the use of a) a first and a second reference energy (i.e. absorption energy), b) the use of a special pressure drop in the flow cell and c) the determination of the concentration of the impurity.

Feature a) is indirectly disclosed in D1 and feature c) is obvious from D3 (see e.g. col.5, l.58 to col.6, l.41) as well as from D1 (see e.g. col.5, l.52 to col.6, l.12).

To select an appropriate pressure drop is regarded to be a normal working option for the skilled person.

In addition to Claim 10 the independent method and apparatus Claims 18 and 26 disclose a "plurality of flow cells". This feature is also regarded to be a normal design procedure.

Thus, also the subject-matter of Claims 10, 18 and 26 does not involve an inventive step.

4. In Claims 2-9, 11-17, 19-25 and 27-29 only slight (constructional) changes are defined which come within the scope of the customary practice followed by persons skilled in the art, especially as the advantages thus achieved can readily be foreseen. Consequently, the subject-matter of these claims also lacks an inventive step.

**INTERNATIONAL PRELIMINARY  
EXAMINATION REPORT - SEPARATE SHEET**

International application No. PCT/US00/11418

**Re Item VII**

Certain defects in the international application

5. If, in spite of the above-mentioned objections, the applicant wishes to proceed further in the regional phase, the following additional points should be noted, i.e. the corresponding amendments provided:
  - 5.1 Documents D1 to D3 should be mentioned and their contents briefly commented on in the introductory part of the description.
  - 5.2 The introductory part of the description should contain statements agreeing with any independent claim submitted.
  - 5.3 Any new independent claim should be submitted in the two-part form set out in Rule 6.3 (b) PCT.
  - 5.4 In the new set of claims reference signs should be inserted in brackets following those features which are so numbered in the figures (Rule 6.2 (b) PCT).
  - 5.5 If new features are taken into the claims, Article 19 (2) of the PCT should not be infringed and it would probably accelerate the examining process if it were indicated from which part of the application any such features are taken.

**Re Item VIII**

Certain observations on the international application

6. Although Claims 1, 10 and 18 have been drafted as separate independent claims, they appear to relate effectively to the same subject-matter and to differ from each other only with regard to the definition of the subject-matter for which protection is sought. The aforementioned claims therefore

lack conciseness. Moreover, lack of clarity of the claims as a whole arises, since the plurality of independent claims makes it difficult, if not impossible, to determine the matter for which protection is sought, and places an undue burden on others seeking to establish the extent of the protection.

Hence, these claims do not meet the requirements of Article 6 PCT.

7. In Claims 8, 16 and 24 the expression "3x10e14-12e14Hz" is unclear and the units of pressure employed in Claims 2, 3, 10, 12, 18-20 and 27 (see also the description) is not additionally expressed in terms of the units stipulated by Rule 10.1(a) PCT.



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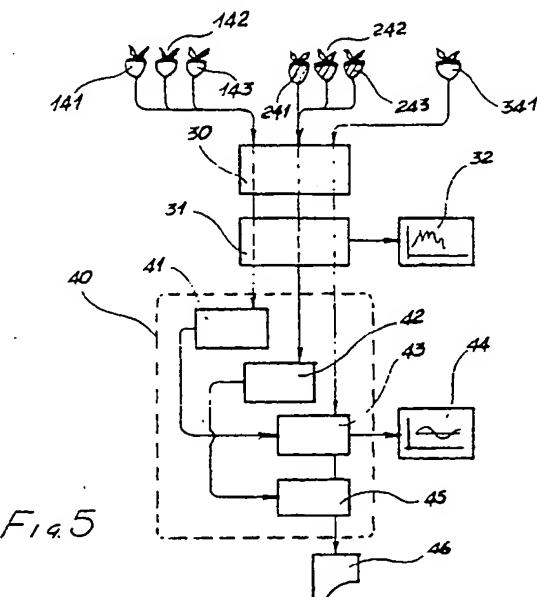
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(54) Device for the comparative analysis of organic samples.

(57) The subject matter of this invention consists of a device for the comparative analysis of organic samples in order to identify foreign matter significant of the presence of a state of deterioration.

The device claims calls for a spectrometer (31) for near-infrared radiation reflectance analysis, as associated with at least one storage unit (41) containing the statistical parameters of a spectrum representative of a sample containing no such foreign matter, defined briefly as "sound", and a calculating, comparing and amplifying unit (43), to compare and amplify the differences between the spectrum of a sample being tested and said statistical spectrum representative of the "sound" sample.



EUROPEAN SEARCH  
REPORT

Application Number

EP 90 83 0390

## DOCUMENTS CONSIDERED TO BE RELEVANT

Category	Citation of document with indication, where appropriate, of relevant passages	Relevant to claim	CLASSIFICATION OF THE APPLICATION (Int. Cl.5)
A	US-A-4 102 646 (R.T. SLEETER) * Columns 3,4 *	1	
A	ANALYST, vol. 114, July 1989, pages 819-822, London, GB; A. GRANT et al.: "Simultaneous determination of sodium hydroxide, sodium carbonate and sodium chloride concentrations in aqueous solutions by near-infrared spectrometry" * Page 819 *	1	
<p style="text-align: center;">- - - - -</p> <p style="text-align: right;">TECHNICAL FIELDS SEARCHED (Int. Cl.5)</p>			

The present search report has been drawn up for all claims

Place of search	Date of completion of search	Examiner
The Hague	04 June 91	BOEHM CH.E.D.

## CATEGORY OF CITED DOCUMENTS

- X: particularly relevant if taken alone
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- A: technological background
- O: non-written disclosure
- P: intermediate document
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EUROPEAN SEARCH  
REPORT

EP 90 83 0390

## DOCUMENTS CONSIDERED TO BE RELEVANT

Category	Citation of document with indication, where appropriate, of relevant passages	Relevant to claim	CLASSIFICATION OF THE APPLICATION (Int. Cl.5)
X	B.G. OSBORNE et al.: "Near infrared spectroscopy in food analysis", 1986, Longman Scientific & Technical, New York, US; CHAPTER IV: "Signal processing", pages 78-82; chapter V, pages 86-101 * Pages 78-82, 87-91, 96-98 * - - -	1-4,6-8	G 01 N 21/35 . G 01 J 3/28
X	ANALYTICAL CHEMISTRY, vol. 59, no. 15, August 1987, pages 1921-1930; R.A. LODDER et al.: "Detection of capsule tampering by near-infrared reflectance analysis" * Pages 1921-1923 *	1,6-8	
X	FOOD CHEMISTRY, vol. 29, 1988, pages 233-238; B.G. OSBORNE et al.: "Discriminant analysis of black tea by near infrared reflectance spectroscopy" * Pages 235-237 *	6-8	
X	APPLIED SPECTROSCOPY, vol. 42, no. 2, February 1988, pages 228-236; M.P. FULLER et al.: "Partial least-squares quantitative analysis of infrared spectroscopic data. Part II: Application to detergent analysis" * Pages 228-230 *	1,6-8	
X	JOURNAL OF THE SCIENCE OF FOOD AND AGRICULTURE, vol. 39, 1987, pages 349-355; A.M.C. DAVIES et al.: "Screening of tomato purée for excessive mould content by near infrared spectroscopy: a preliminary evaluation" * Pages 351-354 *	1,6	G 01 N 21/35 G 01 N 21/27 G 01 N 21/31 G 01 J 3/28 G 01 N 33/02
X	ANALYTICAL CHEMISTRY, vol. 61, no. 18, 15th September 1989, pages 2016-2023; G. JANATSCH et al.: "Multivariate calibration for assays in clinical chemistry using attenuated total reflection infrared spectra of human blood plasma" * Pages 2016-2017 *	1,6-8	
		-/-	
The present search report has been drawn up for all claims			

Place of search	Date of completion of search	Examiner
The Hague	04 June 91	BOEHM CH.E.D.
CATEGORY OF CITED DOCUMENTS		
X: particularly relevant if taken alone	E: earlier patent document, but published on, or after the filing date	
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P: intermediate document		
T: theory or principle underlying the invention	&: member of the same patent family, corresponding document	